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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/813,897 | 03/30/2004 | Kimmo Mylly | 915-005.098 | 5044 |

4955 7590 11/16/2006

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|---------------|--------------|
| EXAMINER | |
| SONG, JASMINE | |
| ART UNIT | PAPER NUMBER |
| 2188 | |

DATE MAILED: 11/16/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

| | | | |
|------------------------------|------------------------|---------------------|--|
| Office Action Summary | Application No. | Applicant(s) | |
| | 10/813,897 | MYLLY, KIMMO | |
| | Examiner | Art Unit | |
| | Jasmine Song | 2188 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 30 March 2004.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-22 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 30 March 2004 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|-----------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>03/30/04</u> . | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| | 6) <input type="checkbox"/> Other: _____. |

Detailed Action

Specification

1. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Drawings

2. The drawings filed on 03/30/04 have been approved by the Examiner.

Oath/Declaration

3. The applicant's oath/declaration has been reviewed by the examiner and is found to conform to the requirements prescribed in 37 C.F.R. 1.63.

Information Disclosure Statement

4. The information disclosure statement (IDS) submitted on 03/30/04 is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 1-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ootani et al., US patent 6,959,365 B2, in view of Kanehira et al., US 2003/0110361 A1.

Regarding claim 1, Ootani teaches a method for performing a processing function (it is taught as one of a series of processing such as erase/write or rewrite) of a memory in a block memory comprising memory cells where data can be stored (Fig.1 and Fig.2), and a connection bus comprising at least a ready/busy line (Fig.1, RYIBY), which can be set at least to a ready status and to a busy status (col.4, lines 1-8 and col.5, lines 35-41), said method comprising setting the status of said ready/busy line to said busy status in a beginning of the processing function (col.5, lines 35-37), indicating an end of processing function by setting said ready/busy line to said ready status (col.5, lines 37-38), and changing the status of said ready/busy line back to said busy status if a rewrite command is detected (col.5, lines 43-47). Ootani does not teach performing detection of processing errors and changing the status of said ready/busy line back to said busy status if a processing error is detected. However, Kanehira teaches performing detection of processing errors and changing the status of said ready/busy line back to said busy status if a processing error is detected (section 0064, lines 28-43). It would have been obvious to one of ordinary skill in the art at the time the

invention was made to utilize the teachings of Kanehira into Ootani's system such as performing detection of processing errors and changing the status of said ready/busy line back to said busy status if a processing error is detected because instructing the rewriting of the same data with respect to a write error produced in the management area makes it possible to assure the accuracy for performing writing in the management area (see Kanehira, section 0076, last four lines).

Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor. This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

Regarding claims 11,19-20 and 22, Ootani teaches a system, which comprises an electronic device comprising a block memory comprising memory cells for storing data (Fig.1 and Fig.2), and a connection bus comprising at least a ready/busy line, and at least a ready status and a busy status are defined for said ready/busy line (Fig.1, RYIBY; col.4, lines 1-8 and col.5, lines 35-41), and which block memory comprises means for changing the status of said ready/busy line to said busy status in the beginning of the processing function of the block memory (col.5,lines 35-37), and means for indicating the end of processing function by setting said ready/busy line to said ready status (col.5,lines 37-38), the system further comprising means for changing the status of said ready/busy line back to said busy status if a rewrite command is detected (col.5, lines 43-47). Ootani does not teach a comparator for detecting

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processing errors and changing the status of said ready/busy line back to said busy status after a processing error is detected. However, Kanehira teaches a comparator (it is taught as comparing the writing information, section 0064, lines 30-33) for detecting processing errors and changing the status of said ready/busy line back to said busy status if a processing error is detected (section 0064, lines 28-43). It would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the teachings of Kanehira into Ootani's system such as using a comparator for detecting processing errors and changing the status of said ready/busy line back to said busy status if a processing error is detected because instructing the rewriting of the same data with respect to a write error produced in the management area makes it possible to assure the accuracy for performing writing in the management area (see Kanehira, section 0076, last four lines).

Accordingly, one of ordinary skill in the art would have recognized this and concluded that they are from the same field of endeavor. This would have motivated one of ordinary skill in the art to implement the above combination for the advantages set forth above.

Regarding claim 2, Ootani teaches erasing the block memory is used as said processing function, the method comprising performing a comparison of an erased memory cell with the data meant for the status of the erased memory cell in connection with erasing, in order to detect erasing errors, and if an erasing error is detected in the

comparison, changing the status of said ready/busy line back to said busy status (col.4, lines 1-8, it is taught as erase command has been accepted in the flash memory).

Regarding claim 3, Ootani teaches storing data to the block memory is used as said processing function, the method comprising performing a comparison of stored data with data meant to be stored in connection with storing the data, in order to detect storing errors, and if a storing error is detected in the comparison, changing the status of said ready/busy line back to said busy status (it is taught as write command has been accepted in the flash memory, col.4, lines 1-8).

Regarding claim 4, Ootani teaches copying data in the block memory from one location to some other location is used as said processing function, the method comprising performing a comparison of copied data with data meant to be copied in connection with copying the data, in order to detect copying errors, and if a copying error is detected in the comparison, changing the status of said ready/busy line back to said busy status (Ootani does not specifically teach copying operation, Ootani teaches erase, write or mode transition activities issued to the flash memory module form the CPU are all referred to "rewrite", therefore, copy operation can be considered as rewrite, col.6, lines 17-21 and col.5, lines 42-46).

Regarding claim 5, Ootani teaches reading data from the block memory is used as said processing function, the method comprising performing examining status of a

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memory cell being read in connection with reading data, and if a memory cell error is detected in the examination, changing the status of said ready/busy line back to said busy status (col.3, lines 58-64).

Regarding claim 6, Ootani teaches comprising starting the processing function by sending a command to the block memory (col.4, lines 51-56), and setting the status of said ready/busy line to the busy status in a stage when a function according to the command is started in the block memory (col.5, lines 35-37).

Regarding claim 7, Ootani teaches the block memory (memory block 14) is divided into blocks and each block is divided into pages, the method comprising transmitting data to the block memory page by page (Fig.3).

Regarding claims 8 and 17, Ootani teaches comprising performing erasing of at least one block, and setting a previously determined status as the status of all the memory cells of said at least one block (col.7, lines 27-35).

Regarding claim 9, Ootani teaches comprising examining the status of said ready/busy line, and performing re-examination of the status of the ready/busy line when it changes from the busy status to the ready status (col.8, lines 51-57).

Regarding claims 10 and 18, Ootani teaches the connection bus comprises a data bus comprising at least one data line, the method comprising using the data line of said data bus as a ready/busy line (Fig.1).

Regarding claims 12 and 21, Ootani teaches the processing function is one of the following: emptying the memory cells, storing data in memory cells, copying data between memory cells, reading the data stored in the memory cells (col.4, lines 1-8).

Regarding claim 13, Ootani teaches comprising a processor (Fig.1), and a first connection bus between the processor and the block memory, and means for starting the processing function by sending a command to the block memory (Fig.1), and means for setting the status of said ready/busy line to the busy status when the function according to the command has been started in the block memory (col.5, lines 35-37).

Regarding claim 14, Ootani teaches comprising means for creating an interrupt in the processor (col.8, lines 46-49) when the status of the ready/busy line changes from the busy status to the ready status, and the processor comprising means for examining the status of the ready/busy line in connection with handling the interrupt (col.8, lines 41-57).

Regarding claim 15, Ootani teaches comprising a processor(Fig.1), a memory controller, a first connection bus between the processor and the memory controller

(Fig.1), and a second connection bus between the memory controller and the block memory (Fig.1), in which case the commands are arranged to be sent from the processor to the memory controller, as well as from the memory controller to the block memory (Fig.1), the system comprising means for starting storing of the data by sending a command to the block memory(Fig.1), and means for setting the status of said ready/busy line to the busy status when the function according to the command has been started in the block memory (col.5, lines 35-37).

Regarding claim 16, Ootani teaches comprising means for creating an interrupt in the memory controller (col.8, lines 46-49) when the status of the ready/busy line changes from the busy status to the ready status, wherein the memory controller comprises means for examining the status of the ready/busy line in connection with handling the interrupt, and means for forming an interrupt to the processor if the ready/busy line is in the busy status (col.8, lines 41-57).

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Odani US 6484270 B1

Koyama et al US 6829178 B2

Nakazawa et al US 6549475 B2

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8. When responding to the office action, Applicant is advised to clearly point out the patentable novelty which he or she thinks the claims present in view of the state of the art disclosed by the references cited or the objections made. He or she must also show how the amendments avoid such references or objections. See 37 C.F.R. 1.111 (c).

9. When responding to the office action, Applicants are advised to provide the examiner with the line numbers and page numbers in the application and/or references cited to assist examiner to locate the appropriate paragraphs.

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jasmine Song whose telephone number is 571-272-4213. The examiner can normally be reached on 7:30-5:30 (first Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hyung Sough can be reached on 571-272-6799. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Jasmine Song
Patent Examiner

November 7, 2006